

## **MYP/DP Lab Report Guidelines**

Read the instructions and helpers. Write your own. Check it again. Delete the green writing.

### **Title**

- Write a single sentence that describes your investigation.
- Include your independent and dependent variables.
- *For example: "How does the size of a dog impact its bite strength?"*

### **Research Question**

- Your research question is to find out about how two variables are related.
- It can be phrased as a QUESTION or a STATEMENT
- *Question: "How does the mass of a car affect its acceleration as it goes down a ramp?"*
- *Statement: "To investigate how the mass of a car affects its acceleration as it goes down a ramp."*

### **Background Knowledge**

- This is knowledge that is directly related to your research question and enhances your understanding of the investigation.
- It should include how some variables might affect your experiment.
- It should offer some relevant scientific background.
- You should cite sources in this section (in-text citations and works cited at the end of the lab).

### **Hypothesis (not necessary for DP)**

- Predict what will happen in your investigation.
- A hypothesis is not a guess.
- You can make an "If .....then ..... because...." statement.
- *For example: "If the dog is bigger then it will have more bite strength because it has more powerful jaws"*

### **Variables**

You will only have ONE Independent Variable (IV) and ONE Dependent Variable (DV). If you think you have more, check with your teacher.

### **Independent Variable**

- The variable you change. Include a sentence explaining how you will change this variable and by how much.
- How will you measure your independent variable?
- List the levels of your independent variable
- For example: if you are measuring the impact of pollution on moth populations your independent variable is % of pollution (0, 5, 10, 15, and 20%)

### **Dependent Variable**

- The variable you measure.
- You don't change this variable; you think it will change as you change the IV.

- The DV is dependent on you changing the IV.
- Include HOW you will measure the dependent variable  
*For example: if you are measuring how the angle of a ramp impacts acceleration, your dependent variable is the acceleration. You would be measure velocity with a motion detector and then process your data into acceleration)*

### Controlled Variables

- All the things you keep constant in the experiment to make it a “fair test”.
- Prioritize the most important
- \*Equipment is not a controlled variable, but some characteristic of the equipment can be.  
*For example: using the same ramp is not a good controlled variable, but ensuring that the surface of the ramp is the same is a good controlled variable.*
- Include 3 important controlled variables.
- Saying that you will use the same equipment each time is not a specific enough way to ensure your controlled variable.

Fill in the table:

Controlled Variables	How I will you ensure that the variable is controlled?	Why is it important to keep this variable controlled?

### Materials

- A list of the all of the materials you will need to perform your experiment. Your list should include the amounts you will need as well as any details about the sizes.  
*For example: 1x 250ml beaker  
3x 10m rope*

### Methods

1. The method is a numbered set of **step-by-step** instructions.
2. The instructions should be **detailed**, so a stranger could repeat your investigation exactly.
3. A **labeled photograph** or diagram is VERY good. This should show your setup, not just your materials laid out.
4. Name your equipment and materials properly. It is a ‘50mL beaker’ (not just a ‘beaker’); it is 12g of sodium chloride (not just ‘some’ sodium chloride).
5. Any equipment in your method should also be in your materials list and visa versa.
6. Make sure you have enough data – **at least 3/5 trials and 5 levels in your Independent variable** (*i.e angle of ramp and how that affects the speed of a cart. So you would have 5 different angles and would test each angle 3 times*).
7. If you repeat steps, be specific about any replacements.  
*For example: Repeat steps 1-5, replacing 8g mass for 10g mass.*
8. Within your method, you have identified safety issues and explained how you will address them.

## Results

- Include the following:
  1. Raw Data Table
  2. Qualitative (non-numerical) Observations
  3. A sample Calculation
  4. Processed Data Table(s) (if you did more than a simple average)
  5. Appropriate Graph(s)

### A good TABLE:

- Has a **title that describes what's in the table.**  
*For example 'Table 1: Velocity of a car at different ramp angles'.*
- Has descriptive column headings, including units only in headings.
- Records **all** of your measurements.
- Is **easy** to understand for people who did not do your investigation.
- Has a separate headings for **averages** of your trials.
- Your processed data table includes columns for the **independent variable** and the **dependent variable**.

### A good GRAPH:

- Has a title. *For example: 'Graph 1: Enzyme action at different temperatures'.*
- Where appropriate is a scatter plot with a line-of-best-fit.
- Each axis is clearly labeled with units
- Is **neat** and made on the computer
- has the **Dependent Variable** on the **vertical** axis
- has the **Independent Variable** on the **horizontal** axis
- You should only graph processed data

## Conclusion

- Answer, in one sentence, your research question- how does the independent variable impact the dependent variable?
- How do your results answer your research question? Do your results support (not prove) your hypothesis?

- It is OK to conclude that your investigation did not allow you to make a conclusion, this happens all the time.

**Language helpers:** I found that as we increased the temperature.....  
 I concluded that.....  
 By looking at the results of the experiment I found .....  
 I found that the plant grew taller because .....  
 I concluded ..... because .....

**Avoid:** Writing that you 'Proved that .....was correct'.  
 Writing that 'Your experiment worked'.

## Evaluation

- Put your evaluation into a table (headings should be: "problem", "why the problem is significant", "solution")

Problem	Why the Problem is Significant	Solution
Over the course of two days, I used two different toy cars, one of which had a flat tire	The flat tire caused the car to not run smoothly or straight	I should have checked the equipment more thoroughly and chosen a car that had four full tires.

- In order to talk about a problem, you must provide evidence that there was a problem. A problem should have been mentioned in your quantitative or qualitative data previously.
- State SPECIFIC ways to fix your problems
- What factors weren't controlled completely but should have been. How would you control them if you were to repeat the experiment?
- Talk about procedural issues, NOT time management, dealing with classmates, how you feel, etc.
- Present ideas for further testing (different variables or situations)
- Explain how you would extend your experiment

## Works Cited

- Any sources that you used for your background section need full citations.